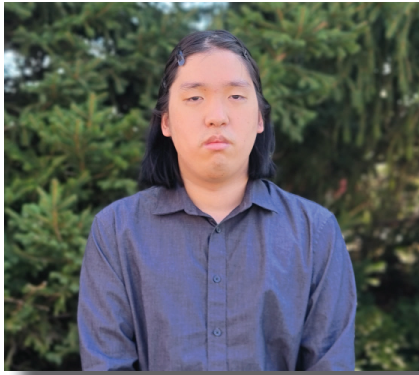




Miller Manufacturing



Devin Fleck
Mechanical Engineering
St. Cloud State University

Organization Background

Miller Manufacturing started as a family-owned business in 1941 and today is owned and operated by Frandsen Corporation of North Branch. Miller Manufacturing's catalog features over 1,000 products which are sold through a large network of farm and animal health supply distributors in the United States and over 30 countries around the world.



"I am truly grateful for this internship introducing me to the complexities of the supply chain and reinvigorating my enthusiasm for making the world a greener and cleaner place. I was always aware that our transition to sustainable technologies was hindered by the complexity of existing infrastructure, but at Miller I learned how to overcome those challenges and found the best technologies to take us into the future." ~ DF

Project Background

Miller Manufacturing has multiple facilities that share responsibility for the manufacture of various product components, as well as final product assembly. The shared responsibility between facilities leads to the shipment of parts and products internally, which Miller identified as a possible opportunity for packaging waste reduction. Miller staff have also been exploring opportunities for energy efficiency in various parts of the facility, as well as ways to increase production efficiency and reduce waste, overall.

Incentives To Change

To prepare for company growth and increasing energy demand, Miller chose to have the intern analyze current processes to identify efficiency opportunities. This is Miller Manufacturing's second year in a row hosting a MnTAP intern and continuing its commitment to process efficiency and environmental stewardship.

"The data shows we are on the right track to reduce waste and obtain substantial cost savings through the hard work of the MnTAP internship program. We appreciate the chance to help our intern gain valuable knowledge through developing relationships within our internal departments and with our suppliers."

*~ Shannon Jurgens, Facilities Manager
Miller Manufacturing Company*

SOLUTIONS

Reusable Pallet Wraps

It is recommended that Miller Manufacturing replace disposable plastic shrink wrap with reusable pallet wraps for internal company shipments. Plastic wrap used to secure packages on pallets shipped to and from the Glencoe and Anoka facilities produces 3,800 lbs of waste. The reusable pallet wraps would be shared between facilities to maximize savings and are currently being tested.

Compressed Air Study

A preliminary analysis of the Miller Glencoe compressed air system shows that leaks are present in the current system's infrastructure. It is recommended that Miller Manufacturing contract for a professional compressed air study to tag specific leaks and identify other system efficiency opportunities. Cost savings from repairing the leaks themselves, as well as potential rebates from repairs and system improvements should outweigh the cost of the contracted air study.

Solutions

Dock Leveler Sweeps

Dock leveler sweeps are used to maintain weather seals on loading dock doors. To increase efficiency and the effectiveness of these sweeps, it is recommended that Miller Manufacturing replace all broken or partially broken dock leveler sweeps every September. In addition, leaves and large debris should be cleaned from the sweeps at the start of the month starting in September and ending in May each year. Keeping at least one new pair of leveler sweeps on hand is advised in case any are found to be damaged.

Energy-Saving Dock Hinges

Energy-saving dock hinges, such as Green Hinges, are spring-loaded hinges for dock doors that allow for a tighter seal to the building. These hinges push the dock doors flush with the wall to close unwanted gaps, which helps minimize heat and energy loss. According to the natural gas energy audit performed during the intern project, these hinges could save Miller 3,000 therms of natural gas and \$2,200 a year. The hinges are eligible for rebates and require minimal process changes or disruption for installation.

Temperature Control Settings

The Miller Glencoe distribution center has two types of heaters that operate in tandem: radiant and unit heaters. The radiant heaters are more efficient and have been noted to provide a more comfortable working environment by employees. Both heaters are currently set at 62°F, which is slightly above what is necessary for employee comfort. It is recommended that Miller set the

radiant heaters to 55°F when the building is unoccupied and 60°F when it is occupied. Unit heaters should be set to 5°F below the radiant heaters, so they are only used to alleviate cold spots or support the radiant heaters on especially cold nights.

Exhaust Fans Occupancy Sensors

Adding occupancy sensors to restroom exhaust fans is recommended to reduce the amount of cooled or heated air lost from the building when restrooms are not in use. A conservative savings estimate for building heating affected by occupancy sensors suggests 300 therms of natural gas and \$2,000 could be saved annually. If wiring allows, adding occupancy sensors to light switches would help reduce electrical costs, as well.



| Recommendation | Annual Reduction | Annual Savings | Status |
|-------------------------------|------------------|----------------|--------------|
| Reusable Pallet Wraps | 3,000 lbs | \$6,500 | Testing |
| Compressed Air Study | 18,000 kWh | \$1,000 | Implementing |
| Dock Leveler Sweeps | 160 therms | \$250 | Recommended |
| Temperature Control Settings | 6,500 therms | \$5,000 | Implemented |
| Exhaust Fan Occupancy Sensors | 300 therms | \$2,000 | Recommended |
| Energy-Saving Dock Hinges | 3,000 therms | \$2,200 | Recommended |

MnTAP Advisor: Matt Domski, Intern Program Manager